



# Glossary of River Ecology Terms

## A

- **Algae:** Microscopic plants that photosynthesize.
- **Alluvial:** Deposited by running water.
- **Alluvium:** A general term for detrital deposits made by stream processes on riverbeds, floodplains, and alluvial fans; esp. a deposit of silt or silty clay laid down during times of flood. The term applies to stream deposits of recent time.
- **Anadromous:** Fish that spend a part of their life cycle in the sea and return to freshwater streams to spawn.
- **Anoxia:** No oxygen present.
- **Aquatic Habitat:** Habitat that occurs in water.
- **Autotrophs:** Organisms that use energy from the sun or from the oxidation of inorganic substances to make organic molecules. They do not eat other organisms. Plants!

## B

- **Backwater:** A small, generally shallow body of water attached to the main channel with little or no current of its own pushed back by a dam or current.
- **Backwater Pool:** A pool that formed as a result of an obstruction like a large tree, weir, dam, or boulder.
- **Bacteria:** Tiny organisms that break down dead matter.
- **Bank Stability:** The properties of a stream bank that counteract erosion, for example, soil type and vegetative cover.
- **Bank-full Channel Depth:** The maximum depth of a channel within a rifle segment when flowing at a bank-full discharge.
- **Bank-full Discharge:** The stream discharge corresponding to the water stage that first overtops the natural banks. This flow occurs, on average, about once every 1 or 2 years.
- **Bank-full Stage:** The stage, on a fixed river gauge, corresponding to the top of the lowest banks within the reach for which the gauge is used as an index.
- **Bank-full Width:** The width of a river or stream channel between the highest banks on either side of a stream.
- **Bar:** An accumulation of alluvium (gravel or sand) caused by a decrease in water velocity.
- **Base Flow:** The sustained portion of stream discharge that is drawn from natural storage sources, and not affected by human activity or regulation.
- **Bed:** The bottom of a channel.
- **Bed Material:** The sediment mixture that a streambed is composed of.
- **Bedrock:** Solid rock that underlies the soil and fragmented rock.

- **Benthic:** On or in the substrate of a water body; bottom dwelling.
- **Benthos:** Organisms that live on the bottom of aquatic environments.
- **Biological:** Living plants or organisms.
- **Boulder:** Substrate particle that is larger than cobble. Large (20+ inches) and Small (10-20 inches).
- **Boundary Layer:** The 1-3 millimeter (0.4-.1 inch) space between flowing water and the substrate, in which friction between the water and bottom causes a decrease of current velocity to zero where the water meets the bottom. The boundary layer is an important dwelling place for benthic animals, plants and microbes because it provides relative safety from being washed downstream.
- **Braided Stream:** A complex tangle of converging and diverging stream channels (Anabranches) separated by sand bars or islands. Characteristic of flood plains where the amount of debris is large in relation to the discharge.
- **Braiding (of River Channels):** Successive division and rejoining of riverflow with accompanying islands.
- **Buffer Zone:** A barrier of permanent vegetation, either forest or other vegetation, between waterways and land uses such as agriculture or urban development, designed to intercept and filter out pollution before it reaches the surface water resource.

## C

- **Catadromous:** Fish that spend a part of their life in fresh water and return to the ocean to spawn (i.e. eels).
- **Channel:** An area that contains continuously or periodically flowing water that is confined by banks and a stream bed.
- **Channelization:** The process of changing (usually straightening) the natural path of a waterway.
- **Chemical:** Parameters related to the chemistry of water.
- **Chlorophyll-a:** A green pigment found in plants; used to measure the amount of algae.
- **Chronic Toxicity:** An adverse effect such as reduced reproductive success or growth, or poor survival of sensitive life stages, which occurs as a result of prolonged exposure to a toxic substance (i.e., long period of time).
- **Clay:** Substrate particles that are smaller than silt and generally less than 0.003 mm in diameter.
- **Cobble:** Substrate particles that are smaller than boulders. 2.5 to 10 inches.
- **Collectors:** Organisms that feed on decomposing particulate organic matter and the associated bacteria.
- **Community:** All the living things that dwell interdependently in a particular place and share the available energy and resources.
- **Competition:** Rivalry for the same limited resource(s) by two or more individuals or groups of individuals.
- **Confluence:** (1) The act of flowing together; the meeting or junction of two or more streams; also, the place where these streams meet. (2) The stream or body of water formed by the junction of two or more streams; a combined flood.

- **Consumers:** Organisms that cannot make their own food and must obtain energy by eating other living things.
- **Course Woody Debris:** Portion of a tree that has fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter.
- **Critical Velocity:** The velocity of water above which a plant or animal, on the stream or river bottom, will be washed downstream.

## D

- **Daylight:** In restoration terms, a verb that denotes the excavation and restoration of a stream channel from an underground culvert, covering, or pipe.
- **Decomposers:** Organisms (such as bacteria and fungi) that break down plant and animal remains into forms once again usable by producers (plants).
- **Delta:** A deposit of sand, silt, and clay where swift waters enter a slower body of water and drop their sediment load. Deltas are usually triangular in shape, with the triangle pointing upstream, toward the source of swifter water.
- **Detritus:** Dead plant, animal, and other organic matter.
- **Discharge:** The volume of water passing a certain point along a stream or river in a given period of time.
- **Dissolved Oxygen:** A measure of the amount of oxygen in the water. Concentration is the measure of the amount of oxygen in a volume of water. Saturation is a measurement of the amount of oxygen in the water compared to the amount of oxygen the water can actually hold at full saturation.
- **Diversity:** The variety, number, and distribution of species within a community.
- **Drainage Area:** The total surface area upstream of a point on a stream that drains toward that point. Not to be confused with a watershed. The drainage area may include one or more watersheds.
- **Drift:** Algae, bacteria, detritus, and invertebrates that are carried downstream by the current.

## E

- **Eddy Current:** A contrary turbulence that creates circular upstream currents behind rocks and other obstructions and along the edges of a stream or river channel. There is also a vertical movement of water in eddies, which mixes oxygen from above into the deeper layers, and provides thermal mixing.
- **Emergent:** Rooted plants that can tolerate flooded soil but not extended periods of being completely submerged.
- **Energy Dissipation:** The loss of kinetic energy of moving water due to internal turbulence, bottom friction, large rocks, debris, or other possible obstacles that impede flow.
- **Energy Flow:** The passing of energy along a food chain between living things in an ecosystem. Some energy is lost, due to growth and maintenance, as the energy passes between trophic levels.

- **Ephemeral Stream:** A stream that flows only in direct response to precipitation and whose channel is at all times above the water table. Ephemeral streams are short-lived, existing only after heavy rainfalls and drying up in between.
- **Erosion:** The removal or wearing away of soil or rock by water, wind, or other agents.

## F

- **Filter Feeders:** Organisms that feed by sieving fine food particles (plants, animals, or detritus) from the water.
- **Flash Flood:** A sudden flood of great volume, usually caused by heavy rain. Also, a flood that crests in a short length of time and is often characterized by high velocity flows.
- **Flow:** The amount of water passing a particular point in a stream or river, usually expressed in cubic feet per second (cfs).
- **Floodplain:** Broad, flat lands along a river or stream that normally become inundated during floods, resulting in the deposition of sediments.
- **Food Chain:** A way of showing how nutrients and energy pass from producers through the various trophic levels in an ecosystem, such as from producers to herbivores, carnivores, and finally decomposers. (Arrangement of organisms in a community according to the order of predation).
- **Food Web:** An integration of the many food chains existing in an ecosystem, showing the complex, interwoven pathways of energy flow between the organisms living in that environment.
- **Fry:** A recently hatched fish.

## G

- **Gravel:** Substrate particles that are .08 to 2.5 inches.
- **Groundwater Flow:** Water that moves through the subsurface soil and rocks.
- **Groundwater Table:** The upper surface of the zone of saturation, except where the surface is formed by an impermeable body.

## H

- **Habitat:** The physical environment in which a certain organism prefers to live.
- **Heterotrophs:** An organism that is not capable of making its own food.
- **Hydric:** Wet
- **Hydrology:** The scientific study of the water of the earth, its occurrence, circulation and distribution, its chemical and physical properties, and its interaction with the environment, including its relationship to living things.

## I

- **Infiltration:** The movement of water through the soil surface into the soil.
- **Inflow:** Water that flows into a waterbody during a specific period of time.

- **Instream Cover:** The layers of vegetation, like trees, shrubs, and overhanging vegetation, that are in the stream or immediately adjacent to the wetted channel.
- **Instream Flow:** A flow or flow regime needed to maintain ecological health in a river or stream.
- **Intermittent Stream:** A stream that feeds or recharges the ground water. They flow only during the wet seasons of spring and early summer (when the water table is high) and after heavy rains during the rest of the year.
- **Invertebrates:** An animal without a backbone.

## L

- **Laminar Flow:** Flow in which water moves smoothly in parallel layers or sheets. Streamlines are distinct and the flow directions at all points remain unchanged. It is characteristic of groundwater flow but can be used to describe surface waters.
- **Large Woody Debris:** Pieces of wood larger than 10 feet long and 6 inches in diameter, in a stream channel.
- **Lentic:** Referring to standing waters; lakes and ponds.
- **Limiting Nutrient:** Nutrient that in small increases can cause larger changes in biological production.
- **Lotic:** Referring to moving waters; rivers and streams.

## M

- **Macroinvertebrates:** Organisms without a backbone, generally visible to the naked eye. “Bugs”.
- **Macrophyte:** Aquatic plants that are large enough to be seen with the naked eye.
- **Main Stem:** The principal channel of a drainage system into which other smaller streams or rivers flow.
- **Meander:** The winding of a stream channel, usually in an erodible alluvial valley. A series of sine-generated curves characterized by curved flow and alternating banks and shoals.
- **Morphology:** The form, shape, or structure of a stream or organism.

## N

- **Neuston:** The community of plants and animals that live on top of, or suspended from, the surface film.
- **Non-Point Source (NPS) Pollution:** Pollution originating in the watershed, often entering the waterbody via surface runoff or groundwater. Pollution that does not originate from a clean or discrete source.

## O

- **Overbank Flow:** Water flow over the top of the bankfull channel onto the floodplain.
- **Oxbow:** An abandoned meander in a river or stream, caused by cutoff. Used to describe the Ushaped bend in the river or the land within such a bend of a river.
- **Oxygenated:** Holding oxygen in solution.

## P

- **Pathogens:** Disease-causing organisms.
- **Perennial Stream:** A stream that normally flows year-round because it lies at or below the ground water table, which constantly replenishes it.
- **Permeability:** The capability of soil and other geological formation to transmit water.
- **Periphyton:** An assemblage of microorganisms (plants and animals) firmly attached to and growing upon solid surfaces such as the bottom of a waterbody, rocks, logs, and structures.
- **pH:** A measure of the hydrogen ion activity in the water, or, in general terms, the acidity of the water.
- **Photosynthesis:** Producing carbohydrates with the aid of sunlight.
- **Physical:** Parameters that can be perceived using the senses.
- **Phytoplankton:** Plankton that is composed of tiny plants and plant matter which consists largely or algae. These plants are major sources of production in aquatic systems.
- **Piscivorous:** Fish eating.
- **Plankton:** Plants and animals that are freely moving about the water column.
- **Plant Zonation:** The zones of plants having different growth forms, which can be observed as a gradation moving from shallow to deep water (or vice versa): emergent zone, floating-leaved zone, submergent zone, and open water zone.
- **Point Source (PS) Pollution:** Pollutants discharged from any identifiable point, including pipes, ditches, channels, sewers, tunnels, and containers of various types.
- **Pool:** A reach of stream that is characterized by deep low velocity water and a smooth surface.
- **Predation:** An interaction during which one organism (predator) kills and consumes another organism (prey). Predation is usually used to describe an interaction between two animals, but herbivores can also be considered predators upon plants, and some specialized plants are predaceous on animals.
- **Producers (Primary):** Green plants and other autotrophs that are capable changing inorganic elements into organic tissues (food energy).
- **Productivity:** A measure of the ability of an ecosystem to sustain life, including such factors as fertility, climatic conditions, and the available sunlight and water.

## R

- **Rapid:** A reach of stream that is characterized by small falls and turbulent, high-velocity water.
- **Reach:** A section of stream between two different points.
- **Riffle:** A reach of stream that is characterized by shallow, fast moving water broken by the presence of rocks and boulders.
- **Riparian Area:** An area of land and vegetation adjacent to a stream that has a direct effect on the stream. This includes woodlands, vegetation, and floodplains.

- **Riparian Buffer:** The area of land and vegetation used to help filter pollution from entering a waterbody.
- **Riparian Habitat:** The aquatic and terrestrial habitat adjacent to streams, lakes, estuaries, or other waterways.
- **Riparian Vegetation:** Plants that grow rooted in the water table of a nearby wetland area such as a river, stream, reservoir, pond, spring, marsh, bog, meadow, etc.
- **Ripple:** (1) A specific undulated bed form found in sand bed streams. (2) Undulations or waves on the surface of flowing water.
- **Riverine Habitat:** The aquatic habitat within streams and rivers.
- **Run:** A reach of stream characterized by deep, low turbulence water.

## S

- **Sand:** Substrate particles that are .062 to 2.0 millimeters. Sand is larger than silt and smaller than gravel.
- **Scrapers:** Herbivores that graze on algae attached to stony and organic surfaces.
- **Scour:** The erosive action of running water in streams, which excavates and carries away material from the bed and banks.
- **Sedimentation:** (1) The combined processes of soil erosion, entrainment, transport, deposition, and consolidation. (2) Deposition of sediments.
- **Sediment Load:** The soil particles transported through a channel by stream flow.
- **Shredders:** Animals that eat plant remains and break them down into smaller pieces. Group of herbivores and detritivores that chew large organic particles. The herbivorous shredders bite the leaves, petioles, and stems of aquatic plants; some tunnel their way completely into the living tissue to feed.
- **Silt/Clay:** Substrate particles that are <.062 millimeters.
- **Slope:** The ratio of the change in elevation over distance.
- **Spawning:** The depositing and fertilizing of eggs by fish and other aquatic life.
- **Specific Conductance:** The numerical expression of the ability of water to carry an electrical current at 25 C and is a measurement of free ion (charged particles) content in the water.
- **Stream Bank:** The side slopes of an active channel between which the stream flow is normally confined.
- **Stream Channel:** The bed where a natural stream of water runs or may run; the long narrow depression shaped by the concentrated flow of a stream and covered continuously or periodically by water.
- **Stream Gradient:** A general slope or rate of change in vertical elevation per unit of horizontal distance of the water surface of a flowing stream.
- **Stream Order:** Classifies a stream in relation to tributaries, drainage area, total length, and age of water. First order streams are the terminal twigs – the youngest segments of a stream system; they have no tributaries. Second order streams are formed by the junction of two first order tributaries. A third order stream is fed by first and second order tributaries, etc.



- **Streambed:** (1) The unvegetated portion of a channel boundary below the baseflow level. (2) The channel through which a natural stream of water runs or used to run, as a dry streambed.
- **Submergent:** Plants that grow and reproduce while completely submerged.
- **Substrate:** (1) The composition of a streambed, including either mineral or organic material. (2) Materials that form an attachment medium for organisms.
- **Surface Film:** The interface between water and the atmosphere above it, which, because of the force of the surface tension, forms a surface capable of supporting the weight of small and microscopic organisms.
- **Surface Tension:** The attraction of molecules to each other on a liquid's surface. Thus, a barrier is created between the air and the liquid.

## T

- **Thalweg:** 1) The lowest thread along the axial part of a valley or stream channel. (2) A subsurface, groundwater stream percolating beneath and in the general direction of a surface stream course or valley. (3) The middle, chief, or deepest part of a navigable channel or waterway.
- **Toe:** The break in slope at the foot of a stream bank where the bank meets the bed.
- **Top of Bank:** The break in slope between the bank and the surrounding terrain.
- **Total Phosphorus:** The nutrient that limits the algae's ability to grow and reproduce.
- **Transparency:** Water clarity.
- **Tributary:** A stream that flows into another stream, river, or lake.
- **Trophic Level:** Position in the food chain.
- **Turbidity:** The amount of suspended particles in water, such as clay, silt, and algae that cause light to be scattered and absorbed, not transmitted in straight lines through the water.
- **Turbulent Flow:** As velocity increases, turbulent flow arises and it is characterized by irregularity.

## V

- **Velocity:** The speed of water flowing in a watercourse, such as a river.

## W

- **Watershed:** The land that drains to a particular waterbody.
- **Woody Debris:** Referring to wood in streams.

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